

**SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS
NHTS MODEL DOCUMENTATION REPORT - DRAFT**

PREPARED FOR:
Southern California Association of Governments

PREPARED BY:

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NHTS Model

**SCAG Model
Task Force**

January 25, 2012

Presentation Outline

- Study background
- Study participants
- Peer review process
- Study overview
- Study findings
- Next Steps

Study Origin

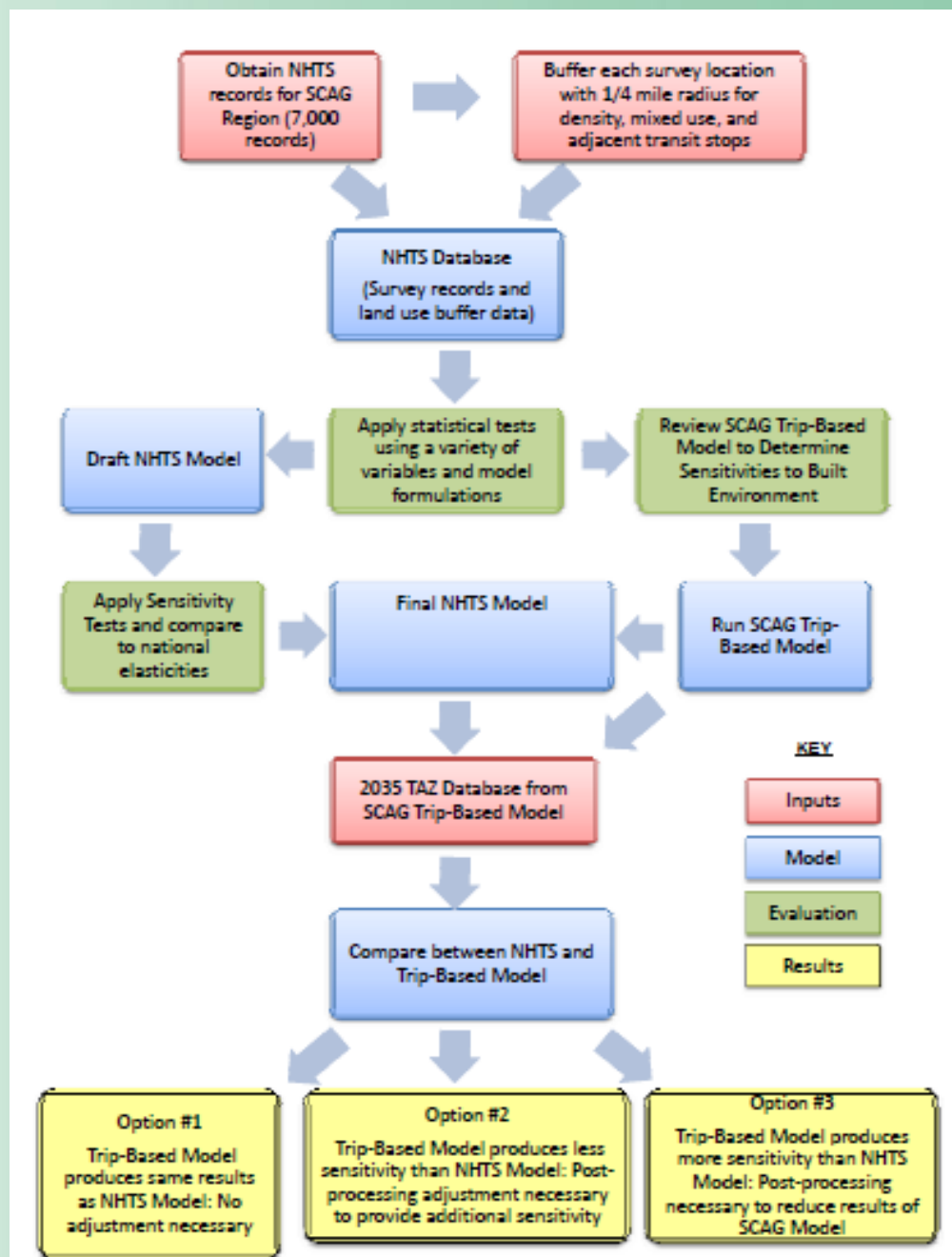
- Land use variables included in SCAG model
- Travel behavior sensitive to land use form
 - Increasing density can reduce travel behavior
- Question as to how much of this sensitivity is captured in SCAG model

Why Is This Issue Important?

- Input into the Sustainable Communities Strategy (SCS)
- Integrated with other strategies to reach regional GHG reduction goals
- Want to make sure that SCAG receives enough credit for any land use related strategies
 - Increased density, mixed-use, etc
- Likely area of review and comment

SCS Review & Comment

- SANDAG received comments from:
 - OPR, CARB, Attorney General and Environmental Groups
 - Questions about quantifying land use and other reductions
- SCAG wanted to be proactive in addressing potential comments and questions
- Project included outreach to CARB



3 Potential Outcomes of the Study

- Option #1- SCAG model is too sensitive to land use form
- Option #2- SCAG model is appropriately sensitive to land use form
- Option #3- SCAG model is not sensitive enough to land use form

SCAG Team Introduction

- Fran Wen (SCAG)
- Hsi-Hwa Hu (SCAG)
- Jerry Walters (Fehr & Peers)
- Chris Gray (Fehr & Peers)
- Rich Kuzmyak (Renaissance Planning)

Peer Review Panelists

- Marlon Boarnett- UC Irvine
- Susan Handy- UC Davis
- Bruce Greisenback- SACOG
- Elizabeth Sall- San Francisco
Transportation Authority (SFTA)

Peer Review Panel

- A Peer Review Panel was commissioned to assist
- Not a replacement for formal peer review process recently completed related to Travel Model
- 2 peer review panel meetings held
- 1 final peer review panel meeting

Study Overview

- Step #1- Extract NHTS Data for SCAG Region
- Step #2- Apply statistical analysis to quantify relationship between land use and travel behavior
- Step #3- Test SCAG model to determine sensitivity

NHTS Data

- National Household Travel Survey
- Southern California Data Set
- Contains travel survey records
- SCAG Staff identified additional land use characteristics for each survey record

Variables in Creation Order						
#	Variable	Type	Len	Format	Informat	Label
1	HOUSEID	Char	8	\$8.	\$8.	HH eight-digit ID number
2	HHSTATE	Char	2	\$2.	\$2.	State HH location
3	HH_HISP	Char	2			Hispanic status of HH respondent
4	HH_RACE	Char	2			Race of HH respondent
5	HHR_HISP	Char	2			Hispanic Status of HH respondent
6	HHR_RACE	Char	2			Race of HH respondent
7	PERSONID	Char	2			Person ID number
8	DRIVER	Char	2			Driver status of S
9	HH_HB_F	Char	2	\$2.		Imputed HH respondent's ethnicity and race combined : 1= Hispanic Black, 2=nonHispanic Black, 3=Hispanic, nonBlack, 4=nonHispanic other race
10	R_SEX	Char	2	\$2.		Respondent gender
11	WORKER	Char	2			Subject worker status
12	DRVRCNT	Num	8			Number of Drivers in HH
13	CMPLTPCT	Num	8			PERCENT COMPLETE
14	HHCNTYTP	Char	3	\$3.	\$3.	County FIPS code for home address
15	HHCT	Char	6			HH Census Tract
16	HHFAMINC	Char	2			Derived total HH income
17	HHSIZE	Num	8			Count of HH members
18	HHVEHCNT	Num	8			Count of HH vehicles
19	HOMEOWN	Char	2	\$2.		Housing unit owned or rented
20	HOMETYPE	Char	2			Type of housing unit
21	NUMADLT	Num	8			Count of adult HHMs at least 18 years old
22	FLAG100	Char	2			100% COMPLETE FLAG
23	LIF_CYC	Char	2			LIFE CYCLE CLASSIFICATION
24	TDCASEID	Char	12			Trip number
25	TRIPPURP	Char	8			TRIPPURP
26	LANDCELL	Char	2	\$2.		Land line or cell phone household
27	MAINRSLT	Char	2			Respondent final result code
28	WGTYRMON	Char	8			WGT_YR MONTH
29	AWAYHMSP	Char	30			Travel day reason S was away from home - specified
30	AWAYHOME	Char	2			Travel day reason S was away from home
31	CBSACAT	Char	2			CBSA category for the HH home address
32	CBSASIZE	Char	2			CBSA population size for the HH home address

Step #1- Extract NHTS Data

Step #2- Develop NHTS Model

- Tested multiple versions of model formulations
- Tested single-stage and multi-stage model
- Recommended 5-stage model

NHTS Sub-Models

- Sub-Model #1- Auto Ownership
- Sub-Model #2- Vehicle Trips
- Sub-Model #3- Household Trips
- Sub-Model #4- Mode Choice
- Sub-Model #5- Household VMT

Variables in the NHTS Model

- Number of household members and workers
- Household income
- Household density
- Job density
- Diversity (mix of uses)
- Intersection & bus stop density
- Regional job accessibility

Step #3- Testing SCAG Model

- Develop 2008 VMT from Travel Model
- Develop 2035 VMT from Travel Model
 - SCS Scenario
- Apply NHTS Model to Land Use Data in 2035 Travel Model
- Regional VMT was 2% less in NHTS Model

Study Findings

- Model is not fully sensitive to land use factors
 - Difference between Travel and NHTS model using same land use dataset
- 1-2% additional reduction found
- This reduction is in addition to other factors related to transit, pricing, TDM, active transportation, etc

Next Steps

- Conduct final testing of Travel Model
- Update reduction estimate if necessary
- Present results to final Peer Review Panel
- Complete study by end of February